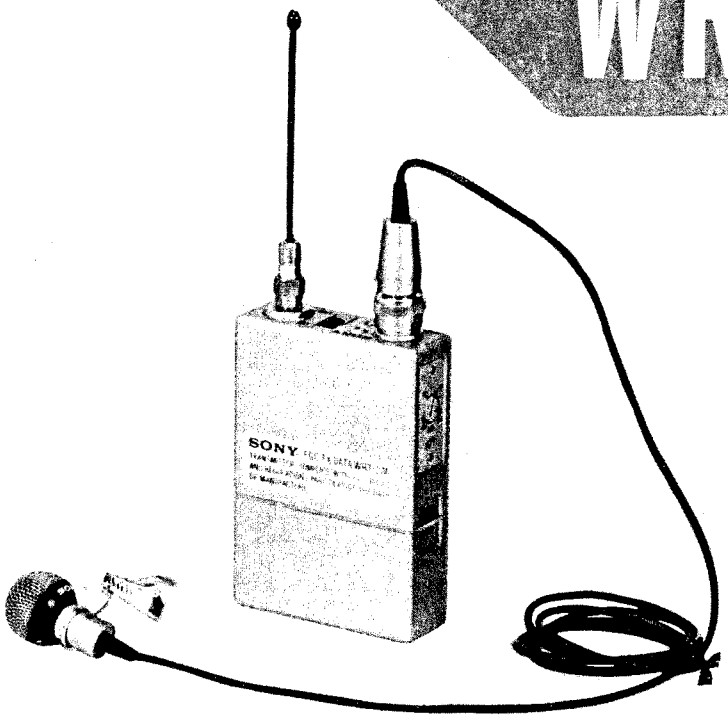
WRT-27A

3472

US Model
Canadian Model



UHF TRANSMITTER

SPECIFICATIONS

Transmitter and modulator sections

Carrier frequency	USA model: 947–952 MHz Canadian model: 902–928 MHz (Refer to the serial number plate)
Modulation	F_3 (Frequency modulation)
RF power output	USA model: 30 mW Canadian model: 35 mW
Oscillator	Crystal-controlled
Frequency stability	USA model: within ±0.005% Canadian model: within ±0.01%
Multiplication	48
Pre-emphasis	50μ sec
Deviation	±2.4 kHz (at 1 kHz) from −20 dB to −60 dB continuously adjustable (0 dB = 1 Vrms)
Attenuator adjustable range	Approx. 40 dB
Audio distortion	Less than 0.1% (±2.4 kHz deviation, at 1 kHz)
Signal-to-noise ratio	Better than 50 dB (±2.4 kHz deviation, at 1 kHz)
Antenna	Approx. ¼ wave length flexible antenna
LED level indicator	Illuminates at more than ±2.4 kHz deviation
LED battery checker	At more than 7 V, illuminates momentarily when the power is turned on
Input impedance	Approx. 4 k ohms (at 1 kHz) balanced input

Power section

Standard operating voltage	9 V
Minimum operating voltage	7 V
Current consumption	45 mA or less
Battery life	Approx. 2 hours (with Eveready No. 522)
Battery	Size 6F22, alkaline (Eveready No. 522, NEDA 1604A or equivalent)

General

Finish	Satin-nickel plate
Operating temperature	5°C to 60°C (41°F to 140°F)
Storage temperature	5°C to 60°C (41°F to 140°F)
Dimensions	Approx. 59×93×20 mm (w/h/d) ($2\frac{3}{8}\times3\frac{5}{8}\times\frac{13}{16}$ inches) **including projecting parts and controls**
Weight	Approx. 180 g (6.4 oz) Not including a battery

Microphone section (equivalent to ECM-50PS)

Type	Electret Condenser Microphone
Directivity	Omni-directional
Power supply	Supplied from transmitter
Microphone cable	2.2 dia.×1200 mm ($\frac{1}{16}$ dia. x 47¼ inches) equipped with 4-pin connector
Dimensions	10.6 dia.×21 mm ($\frac{7}{16}$ dia. x $\frac{13}{16}$ inches)
Weight	Microphone: approx. 8.5 g (0.3 oz) With connector: approx. 27 g (1 oz)
Finish	Satin-nickel plate

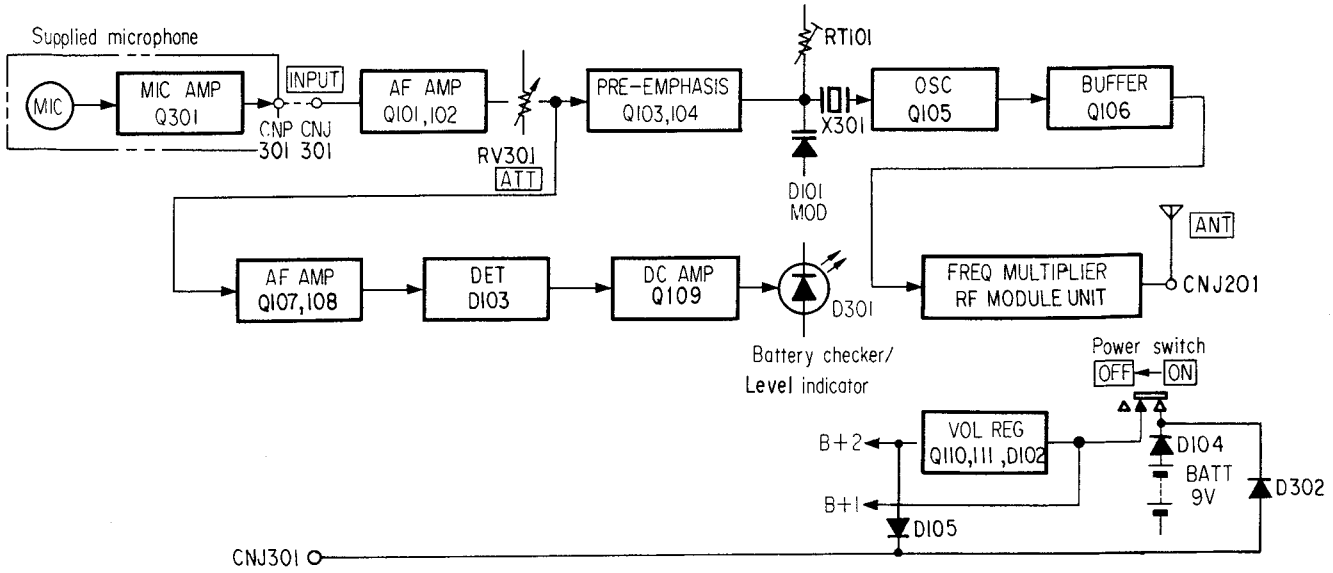
MICROFILM

SONY®
SERVICE MANUAL

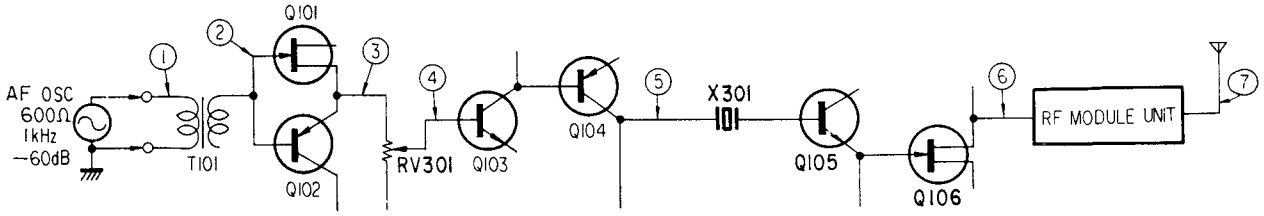
3472

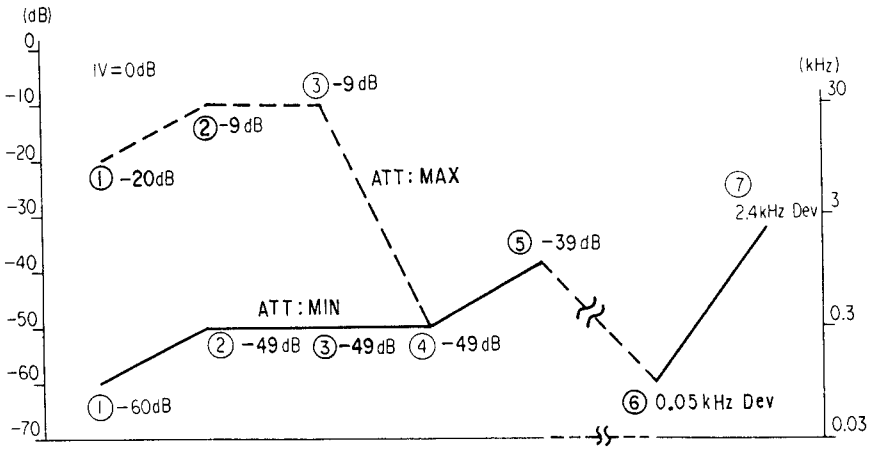
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



1-2. LEVEL DIAGRAM

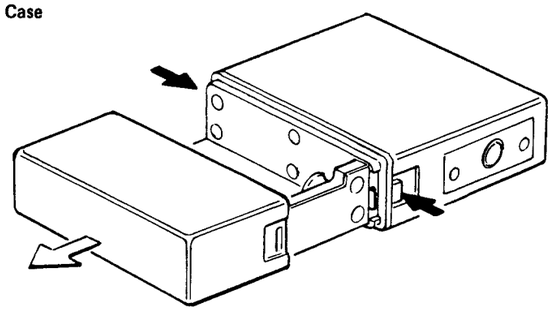




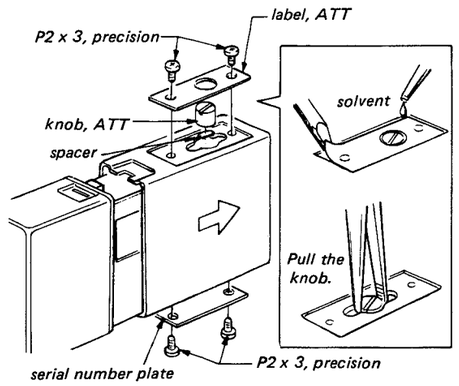
SECTION 2
DISASSEMBLY

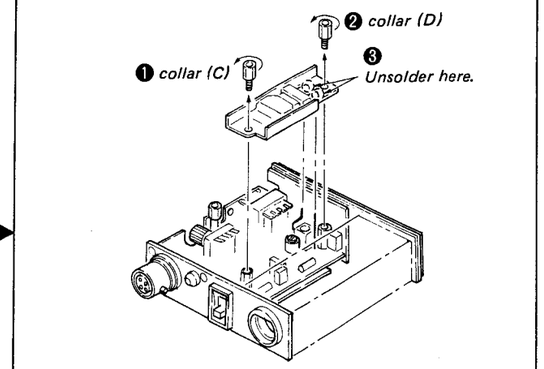
Note: Follow the disassembly procedure in the numerical order given.

Battery Case

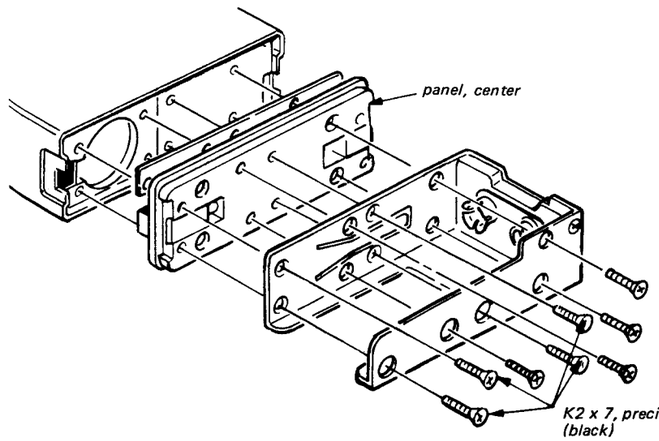


Front Case

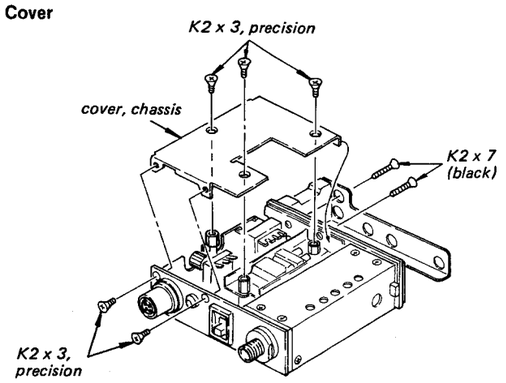




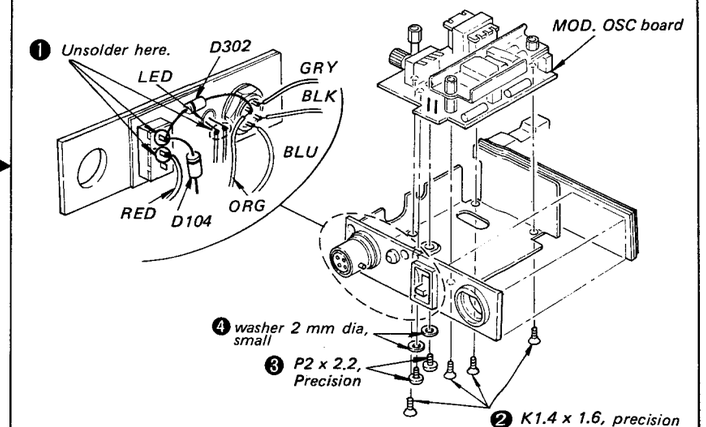
Center Panel (1)



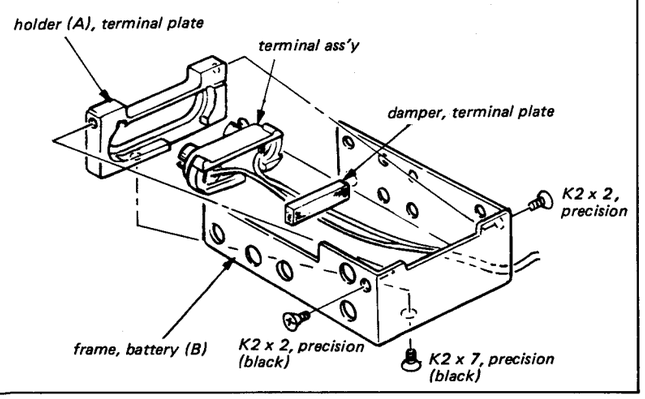
Chassis Cover



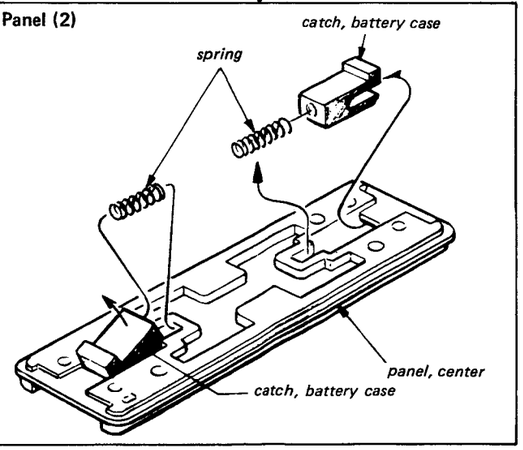
MOD, OSC Board



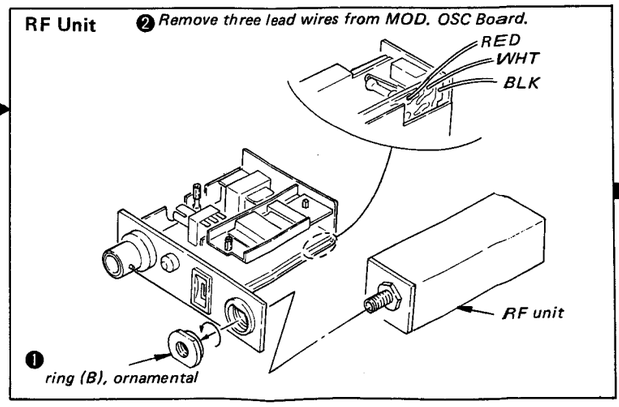
Terminal Plate Ass'y



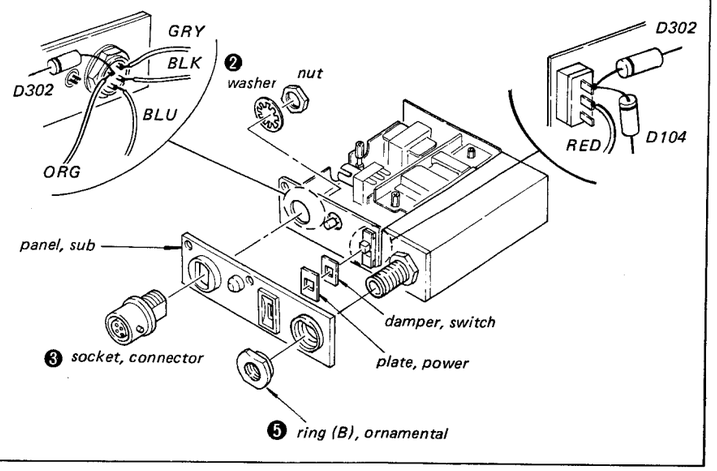
Center Panel (2)



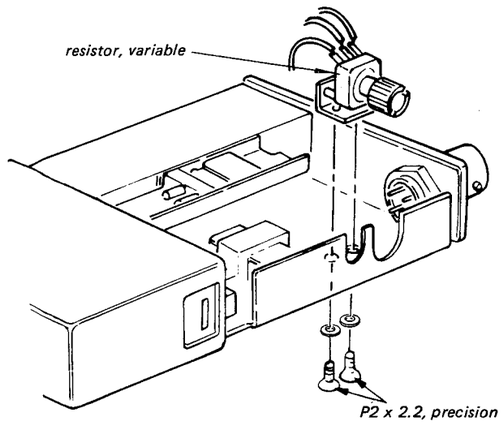
RF Unit



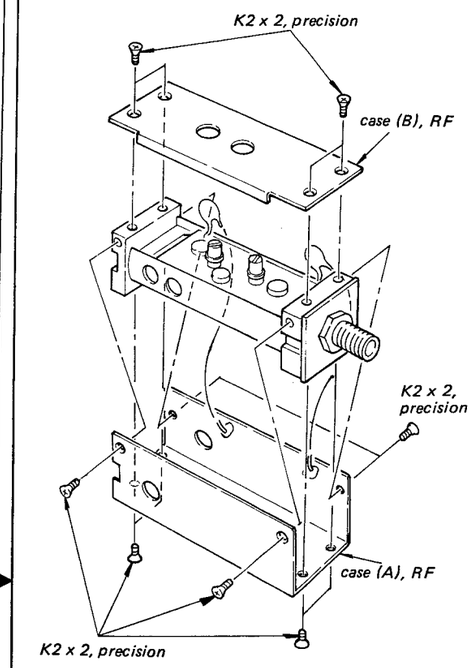
Sub Panel



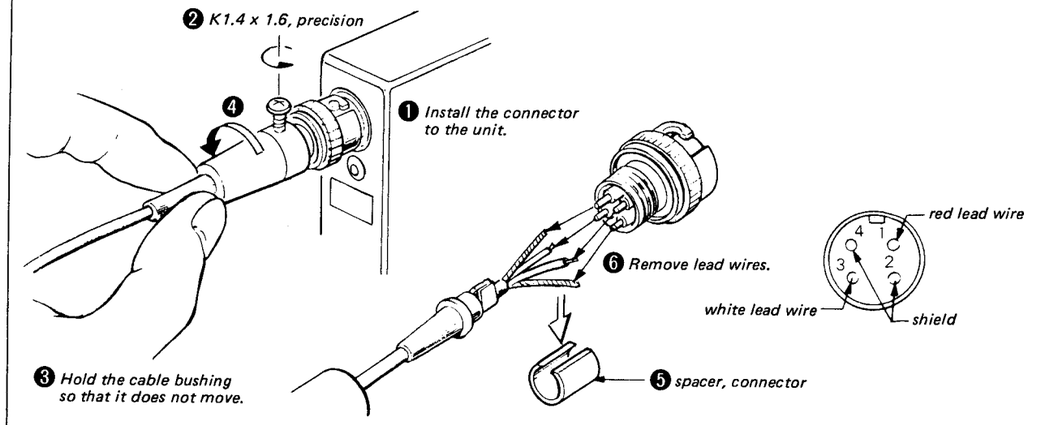
ATT



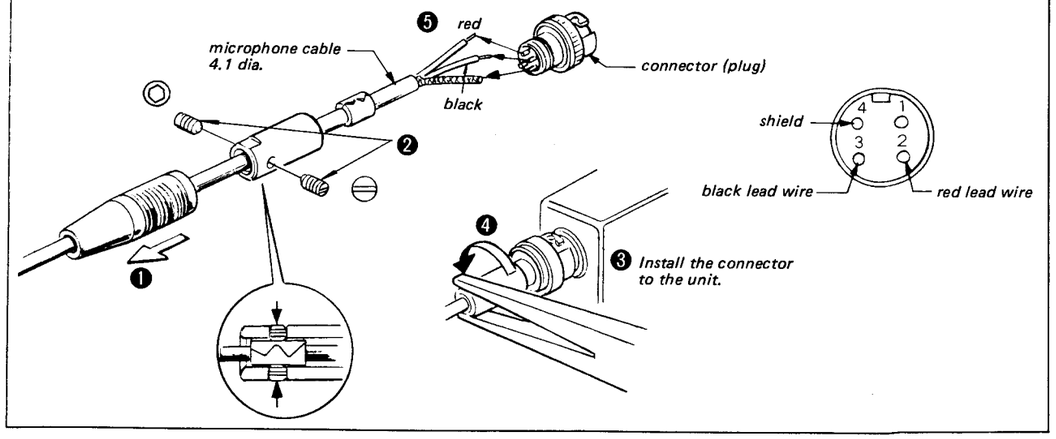
RF Case (A), (B)



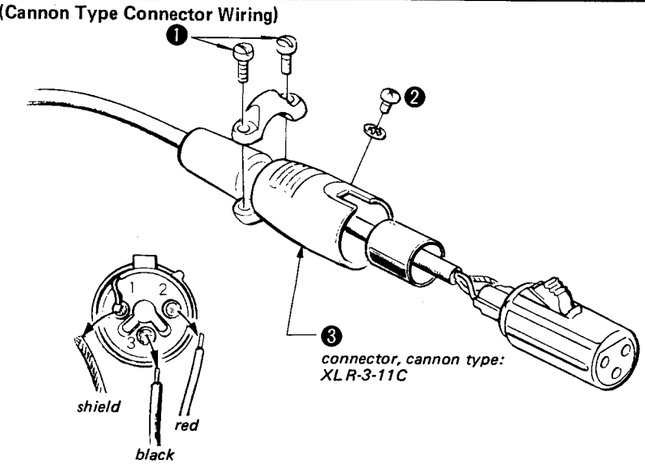
Supplied Microphone Cord (miniconnector wiring)


❷ K1.4 x 1.6, precision
❹
❶ Install the connector to the unit.
red lead wire
❻ Remove lead wires.
white lead wire
shield
❸ Hold the cable bushing so that it does not move.
❺ spacer, connector

Microphone Cord (miniconnector wiring)

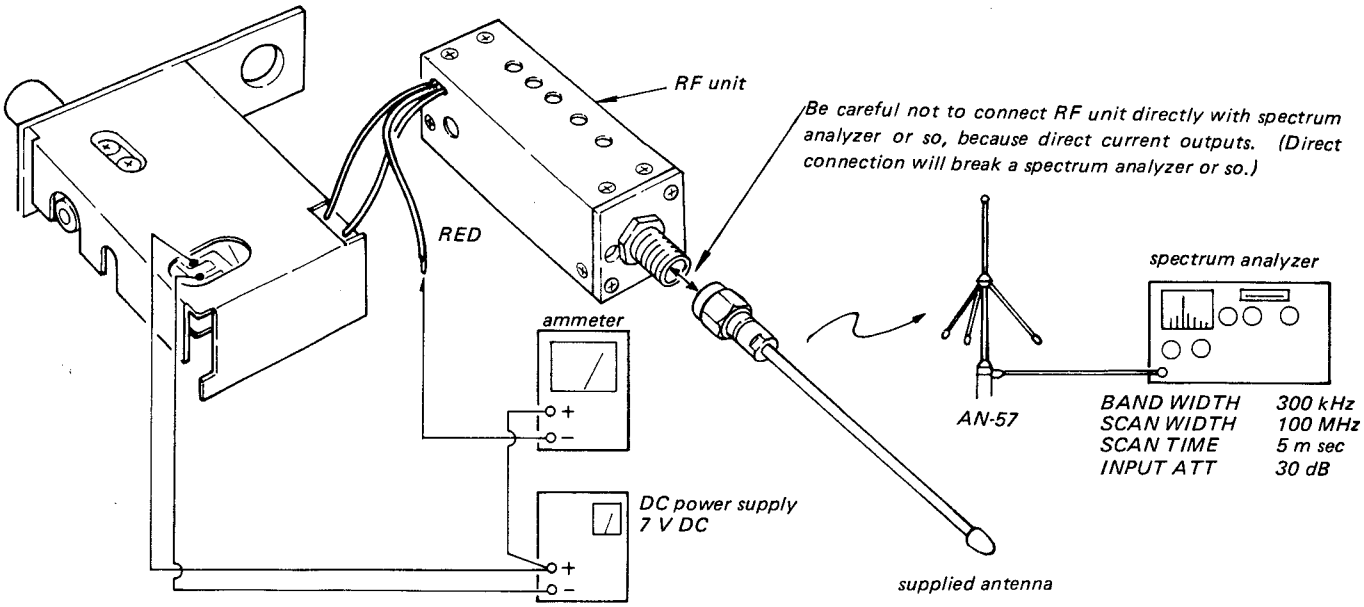


Microphone Cord (Cannon Type Connector Wiring)

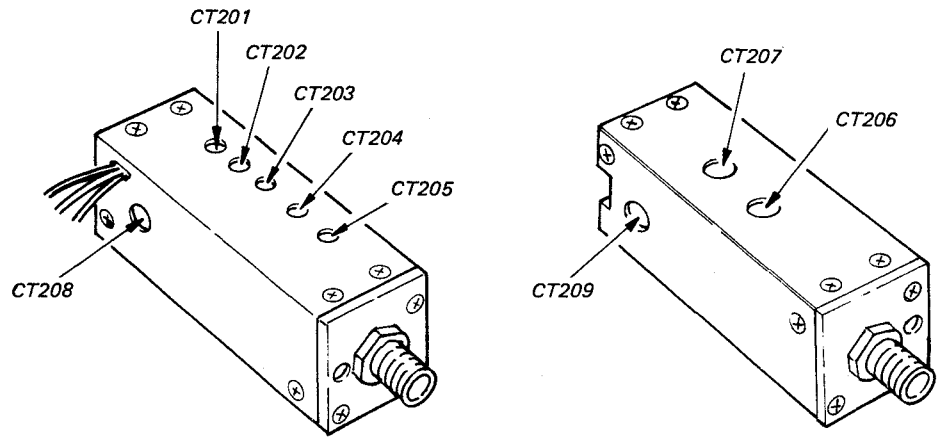


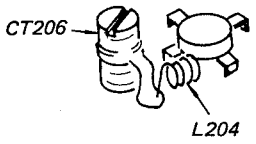
SECTION 3
ADJUSTMENTS

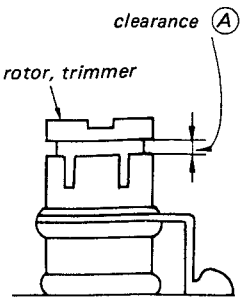
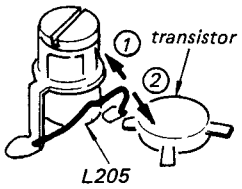
CONNECTION DIAGRAM



ADJUSTMENT LOCATION



<table>
<tr><th>Adjustment Parts</th><th>Remarks</th><th>Ammeter Reading</th></tr>
<tr><td>CT201, 202</td><td>Adjust for a maximum reading on the ammeter.
(Repeat 2 or 3 times.)</td><td>4 mA or more</td></tr>
<tr><td>CT203, 204</td><td>Adjust for a maximum reading on the ammeter.
(Repeat 2 or 3 times.)</td><td>7 mA or more</td></tr>
<tr><td>CT205</td><td>Adjust for a maximum reading on the ammeter.</td><td>10 mA or more</td></tr>
<tr><td>CT206</td><td>1. Adjust for a maximum reading on the ammeter.
2. Make sure that:
• Reading on the ammeter is more than 17 mA.
• Clearance (A) is 0.3 mm or less.
3. If necessary, adjust L204 as follows and repeat steps 1, 2.
 

<table><tr><td>clearance: more than 0.3 mm</td><td>Widen L204</td></tr><tr><td>clearance: none</td><td>Narrow L204</td></tr></table></td><td>17 mA or more
 
</td></tr>
<tr><td>CT207</td><td>1. Adjust for a maximum reading on the ammeter.
2. Make sure that:
• Reading on the ammeter is more than 30 mA.
• Clearance (A) is 0.3 mm or less.
3. If necessary, adjust L205 as follows and repeat steps 1, 2.
 

<table><tr><td>clearance: more than 0.3 mm</td><td>Bend L205 in the direction shown by the arrow (1).</td></tr><tr><td>clearance: none</td><td>Bend L205 in the direction shown by the arrow (2).</td></tr></table></td><td>30 mA or more</td></tr>
<tr><td>CT208, 209</td><td>The 48 fo frequency becomes maximum.</td><td></td></tr>
</table>

OVERALL ADJUSTMENT

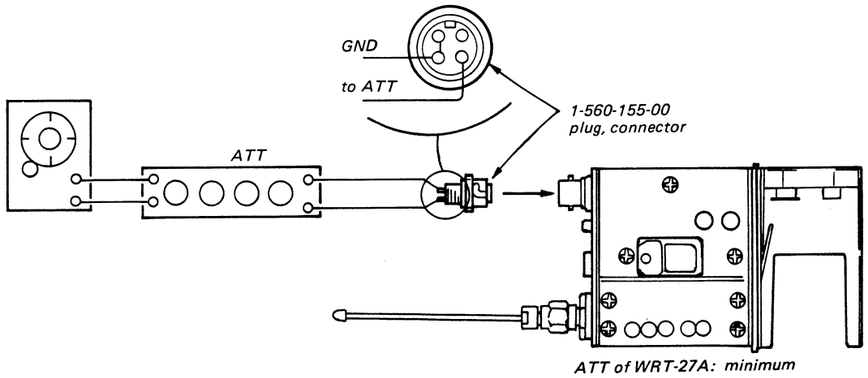
1. Connect the equipment as shown in Fig. A in the next page.
2. Adjust CT209 to obtain maximum frequency level at 48fo and best spurious response. At this time make sure that the spurious and harmonics emission is at least 45 dB or more below carrier.
3. Connect the equipment as shown in Fig. B on the next page.
4. Tune the linear detector accurately.
5. Set the frequency deviation to ±150 kHz by adjusting the attenuator (ATT).
6. Adjust RT101 for the minimum distortion.
7. Turn off the AF oscillator to stop the modulation and adjust L102 so that the reading on the frequency counter is as follows.

Channel	US	CANADA	Channel	US	CANADA
11	947.25	902.75	25	948.50	914.75
12	948.25	904.00	26	–	916.75
13	950.25	905.00	27	–	918.50
14	951.75	908.25	28	–	921.50
15	949.00	909.00	31	949.25	914.25
16	–	911.00	32	948.75	917.25
17	–	912.75	33	950.00	919.00
18	–	915.75	34	951.50	921.00
21	947.75	908.50	35	–	921.75
22	949.75	909.75	36	–	925.00
23	950.75	910.75	37	–	926.00
24	951.25	914.00	38	–	927.25

Unit: MHz
Standard: $^{+0.005}_{-0}$ MHz

8. Repeat steps 4 to 7 a few times until the best distortion characteristic is obtained and the set is adjusted to the specified frequency. The distortion should be less than 1 %.
9. Repeat steps 1 through 8.
10. Ascertain that the spurious response ratio is 45 dB or more when changing the voltage between 7 V and 9 V. If it is less than 45 dB, repeat adjustments.

CONNECTION DIAGRAM



ATT of WRT-27A: minimum

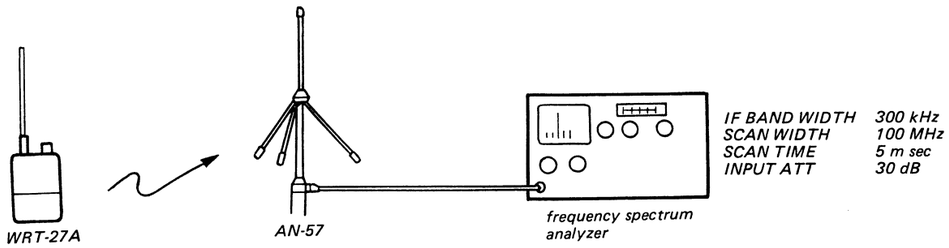


Fig. A

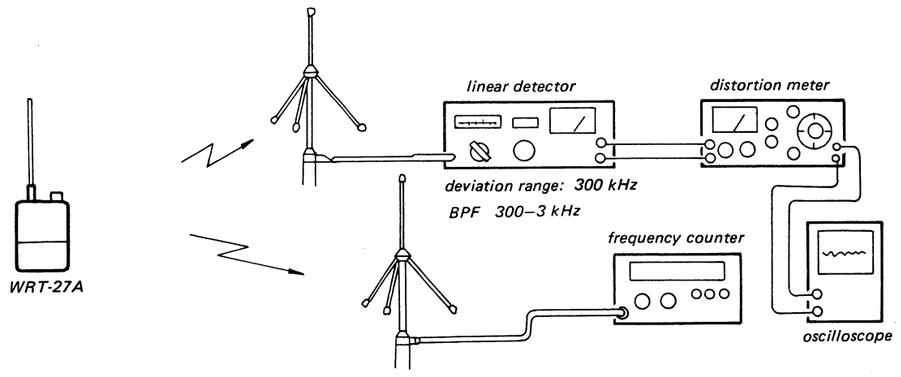
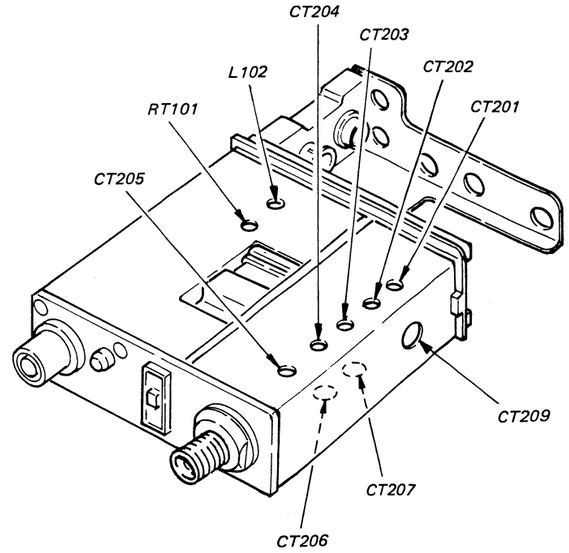


Fig. B

ADJUSTMENT PARTS LOCATION

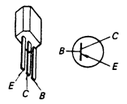


SECTION 4
DIAGRAMS

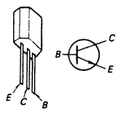
4-1. MOUNTING DIAGRAM

- **Semiconductor Lead Layouts**

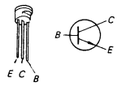
2SA1027R



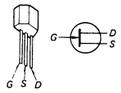
2SC634A
2SC1636



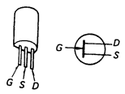
2SC668D



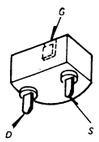
2SK42



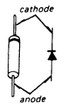
2SK43



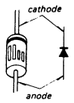
6519-5



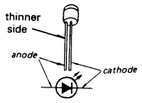
1S1555
RD5.6E
FC52-C



ERA81

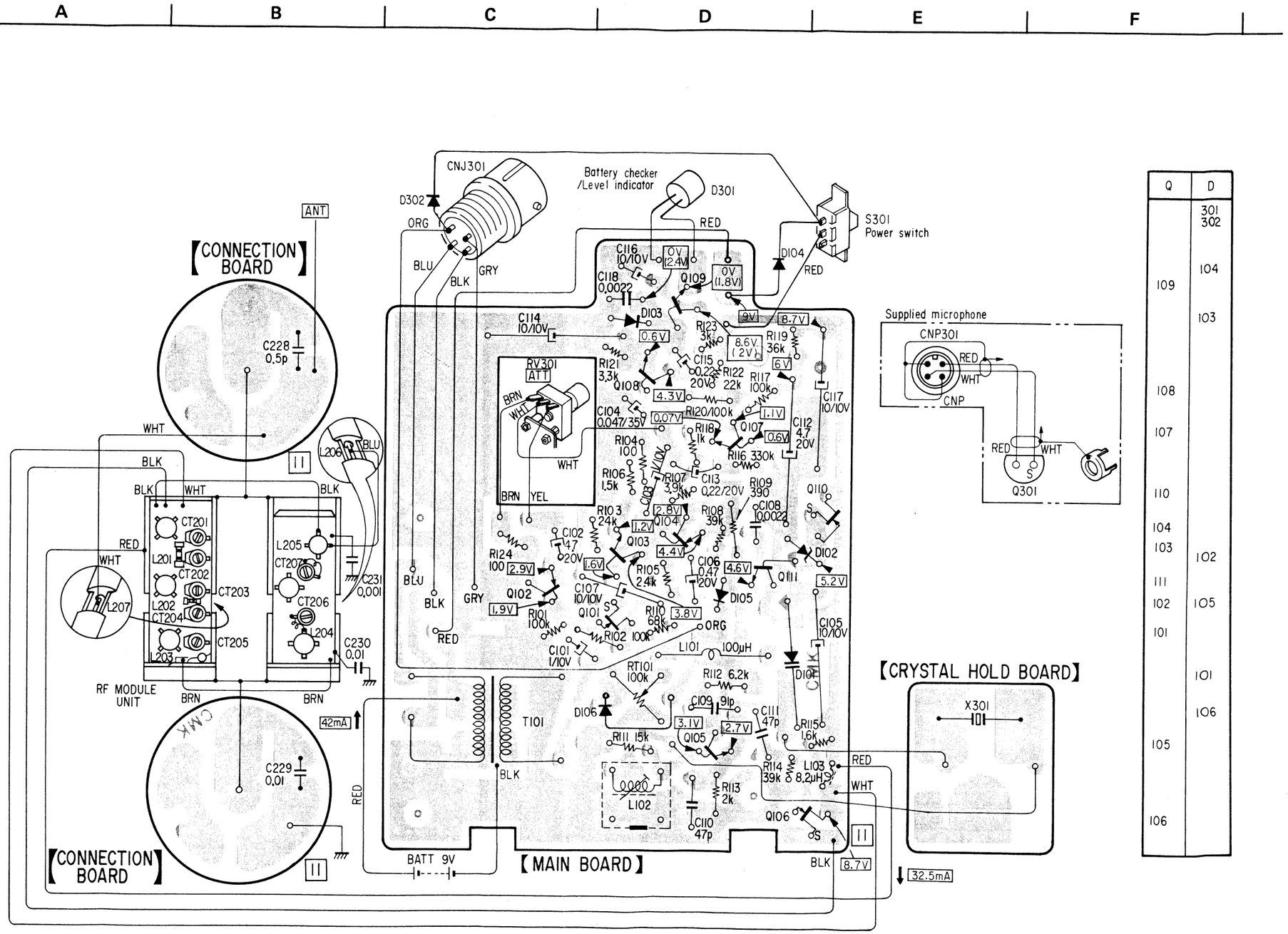


TLR102

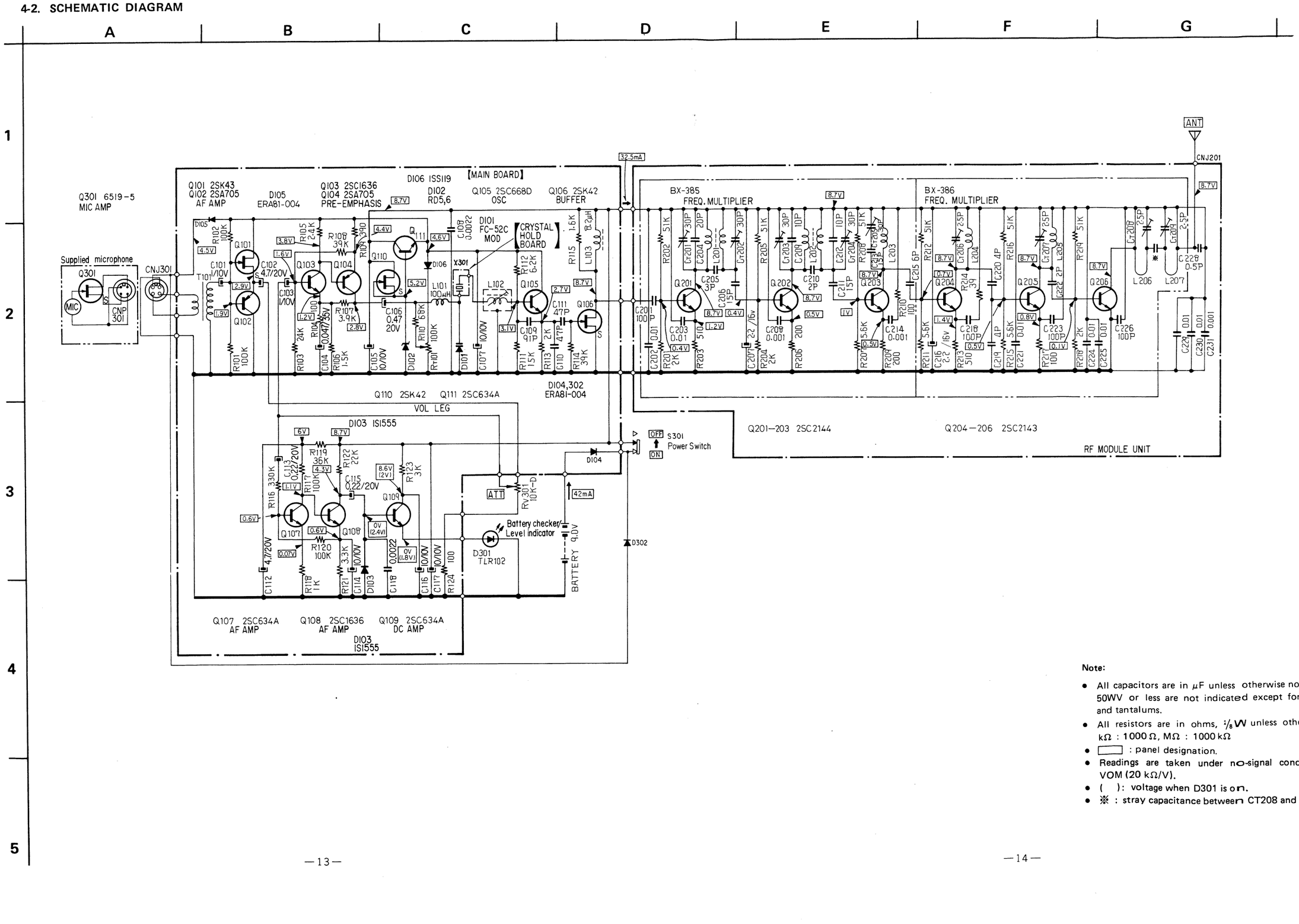


Note:

- ⊡← : indicates side identified with part number.



4-2. SCHEMATIC DIAGRAM

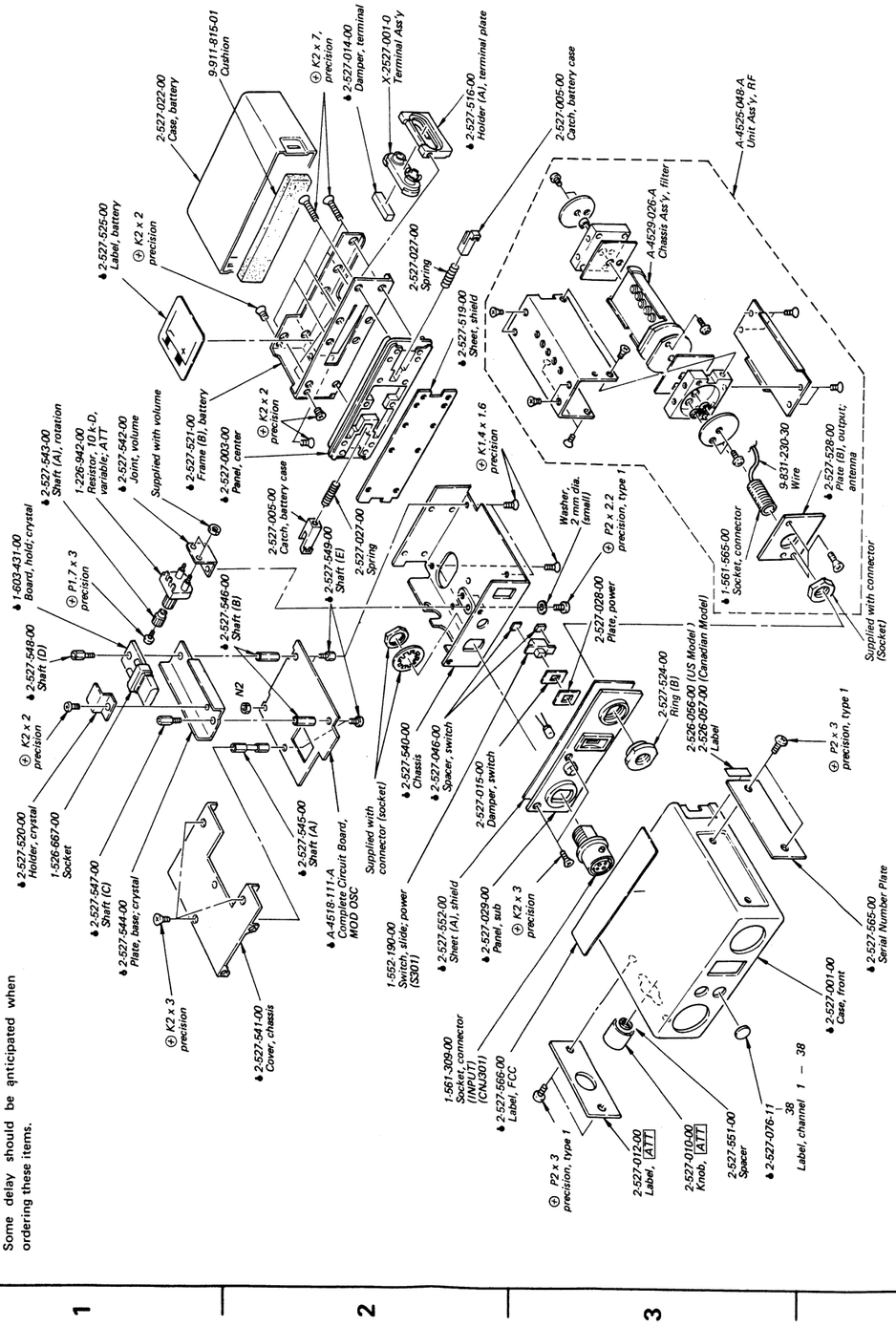


Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭ : panel designation.
- Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
- ( ): voltage when D301 is on.
- ※ : stray capacitance between CT208 and CT209.

SECTION 5
EXPLODED VIEWS

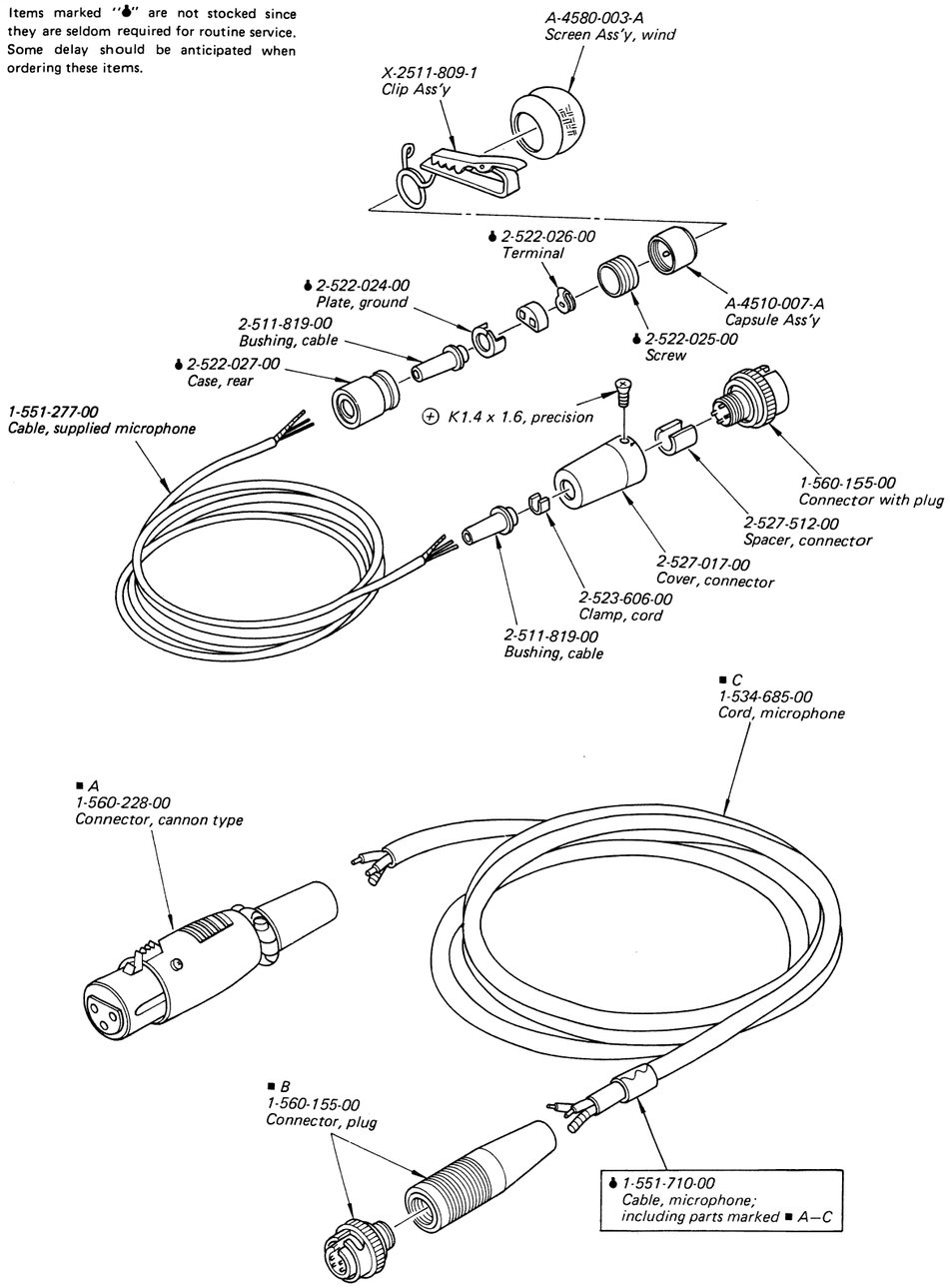
5-1.


2-527-022-00 Case, battery
9-911-815-01 Cushion
⊕ K2 x 7, precision
♦ 2-527-014-00 Damper, terminal
X-2527-001-0 Terminal Ass'y
♦ 2-527-516-00 Holder (A), terminal plate
2-527-005-00 Catch, battery case
A-4525-048-A Unit Ass'y, RF
A-4529-026-A Chassis Ass'y, filter
♦ 2-527-525-00 Label, battery
⊕ K2 x 2 precision
2-527-027-00 Spring
♦ 2-527-519-00 Sheet, shield
♦ 2-527-521-00 Frame (B), battery
♦ 2-527-003-00 Panel, center
⊕ K2 x 2 precision
⊕ K1.4 x 1.6 precision
9-831-230-30 Wire
♦ 2-527-528-00 Plate (B), output; antenna
♦ 2-527-543-00 Shaft (A), rotation
1-226-942-00 Resistor, 10 k-Ω, variable; ATT
♦ 2-527-542-00 Joint, volume
Supplied with volume
2-527-005-00 Catch, battery case
2-527-027-00 Spring
♦ 2-527-549-00 Shaft (E)
Washer, 2 mm dia. (small)
⊕ P2 x 2.2 precision, type 1
♦ 1-561-565-00 Socket, connector
Supplied with connector (Socket)
♦ 1-603-431-00 Board, hold; crystal
⊕ P1.7 x 3 precision
♦ 2-527-548-00 Shaft (D)
♦ 2-527-546-00 Shaft (B)
2-527-028-00 Plate, power
♦ 2-527-524-00 Ring (B)
2-526-056-00 (US Model)
2-526-057-00 (Canadian Model) Label
⊕ K2 x 2 precision
N2
⊕ P2 x 3 precision, type 1
♦ 2-527-520-00 Holder, crystal
1-526-667-00 Socket
♦ 2-527-545-00 Shaft (A)
Supplied with connector (socket)
♦ 2-527-540-00 Chassis
♦ 2-527-546-00 Spacer, switch
♦ 2-527-547-00 Shaft (C)
♦ A-4518-111-A Complete Circuit Board, MOD OSC
2-527-015-00 Damper, switch
♦ 2-527-565-00 Serial Number Plate
♦ 2-527-544-00 Plate, base; crystal
⊕ K2 x 3 precision
1-562-190-00 Switch, slide, power (S301)
♦ 2-527-552-00 Sheet (A), shield
♦ 2-527-029-00 Panel, sub
⊕ K2 x 3 precision
♦ 2-527-001-00 Case, front
♦ 2-527-541-00 Cover, chassis
1-561-309-00 Socket, connector (ANT, ATT) (CN1301)
♦ 2-527-566-00 Label, FCC
⊕ P2 x 3 precision, type 1
2-527-012-00 Label, ATT
2-527-010-00 Knob, ATT
2-527-551-00 Spacer
♦ 2-527-076-11 38 Label, channel 1 – 38

Note:
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

5-2.

Note:
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.


A-4580-003-A Screen Ass'y, wind
X-2511-809-1 Clip Ass'y
♦ 2-522-026-00 Terminal
♦ 2-522-024-00 Plate, ground
2-511-819-00 Bushing, cable
♦ 2-522-027-00 Case, rear
A-4510-007-A Capsule Ass'y
♦ 2-522-025-00 Screw
1-551-277-00 Cable, supplied microphone
⊕ K1.4 x 1.6, precision
1-560-155-00 Connector with plug
2-527-512-00 Spacer, connector
2-527-017-00 Cover, connector
2-523-606-00 Clamp, cord
2-511-819-00 Bushing, cable
■ C 1-534-685-00 Cord, microphone
■ A 1-560-228-00 Connector, cannon type
■ B 1-560-155-00 Connector, plug
♦ 1-551-710-00 Cable, microphone; including parts marked ■ A–C

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description		
		SEMICONDUCTORS		
		Transistors		
Q101	8-723-303-23	2SK43		
Q102	8-729-612-77	2SA1027R		
Q103	8-761-622-00	2SC1636		
Q104	8-729-612-77	2SA1027R		
Q105	8-729-806-84	2SC668D		
Q106	8-727-311-03	2SK42		
Q107	8-726-387-00	2SC634A		
Q108	8-761-622-00	2SC1636		
Q109	8-726-387-00	2SC634A		
Q110	8-727-311-03	2SK42		
Q111	8-726-387-00	2SC634A		
Q301	8-765-195-03	6519-5		
		Diodes		
D101	8-719-900-50	FC52-C		
D102	8-719-156-25	RD5.6E		
D103	8-719-815-55	1S1555		
D104, 105	8-719-981-01	ERA81		
D106	8-719-911-19	1SS119		
D301	8-719-801-02	TLR102		
D302	8-719-981-01	ERA81		
		CAPACITORS		
All capacitors are in μF and tantalum unless otherwise noted. p: μμF.				
C101	1-131-254-00	1	10 V	
C102	1-131-270-00	4.7	20 V	
C103	1-131-254-00	1	10 V	
C104	1-131-274-00	0.047	35 V	
C105	1-131-256-00	10	10 V	
C106	1-131-264-00	0.47	20 V	
C107	1-131-256-11	10	10 V	
C108	1-161-028-00	0.0022	25 V	ceramic (semiconductor)
C109	1-102-972-00	91 p	50 V	ceramic
C110, 111	1-101-880-00	47 p	50 V	ceramic
C112	1-131-270-00	4.7	20 V	
C113	1-131-262-00	0.22	20 V	
C114	1-131-256-00	10	10 V	
C115	1-131-262-00	0.22	20 V	
C116, 117	1-131-256-00	10	10 V	
C118	1-161-028-00	0.0022	25 V	ceramic (semiconductor)
C228	1-163-216-00	0.5 p	50 V	ceramic
C229	1-163-059-00	0.01		ceramic
C230	1-161-032-00	0.01	25 V	ceramic (semiconductor)
C231	1-161-026-00	0.001	25 V	ceramic (semiconductor)
		RESISTORS		
All resistors are in ohms and 1/8 W carbon.				
R101, 102	1-246-807-00	100 k		
R103	1-246-860-00	24 k		
R104	1-246-771-00	100		
R105	1-246-848-00	2.4 k		
R106	1-246-785-00	1.5 k		
R107	1-246-790-00	3.9 k		
R108	1-246-802-00	39 k		
R109	1-246-778-00	390		
R110	1-246-805-00	68 k		
R111	1-246-797-00	15 k		
R112	1-246-853-00	6.2 k		
R113	1-246-847-00	2.0 k		
R114	1-246-802-00	39 k		
R115	1-246-846-00	1.6 k		
R116	1-247-047-00	330 k		
R117	1-246-807-00	100 k		
R118	1-246-783-00	1 k		
R119	1-246-862-00	36 k		
R120	1-246-867-00	100 k		
R121	1-246-789-00	3.3 k		
R122	1-246-799-00	22 k		
R123	1-246-849-00	3 k		
R124	1-246-771-00	100		
RV301	1-226-942-00	10 k, variable; ATT		
RT101	1-223-158-00	100 k, adjustable		

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Ref. No.	Part No.	Description
		MISCELLANEOUS
L101	1-407-823-00	100 μH, microinductor
L102	1-426-011-00	Coil, OSC
L103	1-405-786-00	Coil, 8.2 μH
T101	1-427-339-11	Transformer
CNJ201	1-561-565-00	Socket, connector
CNJ301	1-561-309-00	Socket, connector
S301	1-552-190-00	Switch, power
	1-526-667-00	Socket, crystal
	•1-603-431-00	Printed Circuit Board, crystal hold
	•A-4518-111-A	Complete Circuit Board, MOD OSC
	9-831-230-30	Wire
X301	1-527-744-00 thru 1-527-748-00	Crystal OSC (11CH) (US model)
	1-527-749-00 thru 1-527-753-00	Crystal OSC (21CH) (US model)
	1-527-754-00 thru 1-527-757-00	Crystal OSC (31CH) (US model)
X301	1-527-758-00 thru 1-527-765-00	Crystal OSC (11CH) (Canadian model)
	1-527-766-00 thru 1-527-773-00	Crystal OSC (21CH) (Canadian model)
	1-527-774-00 thru 1-527-781-00	Crystal OSC (31CH) (Canadian model)

ACCESSORIES & PACKING MATERIALS

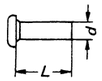
Part No.	Description
1-501-235-00	Antenna
2-527-009-00	Case, leather
2-527-568-00	Carton, individual
2-527-569-00	Carrying Case
• 2-527-514-11 thru 38	Seal, channel
2-599-178-21	Manual, instruction
2-527-550-00	Bag, polyethylene
3-701-623-00	Bag, polyethylene

DIMENSIONS AND PART NO. OF PRECISION SCREWS

⊕ *K*
(Flat-countersunk-head screw)

Type	Size (mm) (d × L)	Part No. Black	Part No. Silver
Type 1	K1.4 × 1.6	7-627-451-08	7-627-451-07
	K1.4 × 1.8		
	K1.4 × 2	7-627-451-38	7-627-451-37
	K1.4 × 2.2		
	K1.4 × 2.5	7-627-451-18	7-627-451-17
	K1.4 × 2.8		
	K1.4 × 3	7-627-451-28	7-627-451-27
	K1.4 × 3.5		7-627-451-47
	K1.4 × 4		
	K1.4 × 4.5		
	K1.4 × 5	7-627-451-78	7-627-451-77
	K1.7 × 1.8		
	K1.7 × 2		
	K1.7 × 2.2		
	K1.7 × 2.5		
	K1.7 × 2.8		
	K1.7 × 3		
	K1.7 × 3.5		
	K1.7 × 4	7-627-450-78	
	K1.7 × 4.5		
	K1.7 × 5		
	K1.7 × 5.5		
	K1.7 × 6		
	K2 × 2	7-627-452-08	7-627-452-07
	K2 × 2.2		———
	K2 × 2.5		———
	K2 × 2.8		———
	K2 × 3	7-627-452-18	7-627-452-17
	K2 × 3.5		———
	K2 × 4	7-627-452-28	
	K2 × 4.5		
	K2 × 5	7-627-452-38	
	K2 × 5.5		
	K2 × 6		
	K2 × 7		
	K2 × 8		

⊕ *P*
(Pan-head screw)



Type	Size (mm) (d × L)	Part No. Black	Part No. Silver
Type 1	P1.4 × 1.4		7-627-551-47
	P1.4 × 1.6	7-627-551-08	7-627-551-07
	P1.4 × 1.8		
	P1.4 × 2	7-627-551-18	7-627-551-17
	P1.4 × 2.2		
	P1.4 × 2.5	7-627-551-28	7-627-551-27
	P1.4 × 2.8	7-627-551-88	
	P1.4 × 3	7-627-551-58	7-627-551-57
	P1.4 × 3.5	7-627-551-68	7-627-551-67
	P1.4 × 4	7-627-551-78	7-627-551-77
	P1.4 × 4.5		
	P1.4 × 5	7-627-551-38	7-627-551-37
	P1.7 × 1.6	7-627-552-18	
	P1.7 × 1.8		
	P1.7 × 2	7-627-552-28	7-627-552-27
	P1.7 × 2.2		
	P1.7 × 2.5	7-627-552-08	7-627-552-07
	P1.7 × 2.8		
	P1.7 × 3	7-627-552-38	7-627-552-37
	P1.7 × 3.5	7-627-552-78	
	P1.7 × 4	7-627-552-48	7-627-552-47
	P1.7 × 4.5		7-627-552-67
	P1.7 × 5	7-627-552-58	7-627-552-57
	P1.7 × 5.5		
	P1.7 × 6		
	P2 × 1.8		
	P2 × 2	7-627-553-18	7-627-553-17
	P2 × 2.2		7-627-554-07
	P2 × 2.5	7-627-553-28	7-627-553-27
	P2 × 2.8		
	P2 × 3	7-627-553-38	7-627-553-37
	P2 × 3.5		7-627-554-17
	P2 × 4	7-627-553-48	7-627-553-47
	P2 × 4.5	7-627-553-58	7-627-553-57
	P2 × 5		7-627-553-67
	P2 × 5.5		
	P2 × 6		
	P2 × 7	7-627-553-88	7-627-553-87
	P2 × 8	7-627-553-98	7-627-553-97
	P2 × 10	7-627-553-78	7-627-553-77
Type 3	P1.4 × 1.4		7-627-850-37
	P1.4 × 1.6		7-627-850-47
	P1.4 × 1.8		7-627-850-77
	P1.4 × 2	7-627-850-08	7-627-850-07
	P1.4 × 2.2		
	P1.4 × 2.5	7-627-850-18	7-627-850-17
	P1.4 × 2.8		
	P1.4 × 3	7-627-850-28	7-627-850-27
	P1.4 × 3.5	7-627-850-58	7-627-850-57
	P1.4 × 4	7-627-850-68	7-627-850-67
	P1.4 × 4.5		7-627-851-17
	P1.4 × 5		7-627-851-27

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